

Amendment to the Claims:

Please amend the claims as follows:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

Claim 1 (original): A method for making a phytase comprising:  
providing a nucleic acid derived from a bacteria encoding a polypeptide having a phytase activity;  
expressing the nucleic acid in a yeast under conditions which allow expression of the enzyme in the yeast.

Claim 2 (original): A method for making a phytase comprising:  
providing a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity;  
expressing the nucleic acid in a yeast under conditions which allow expression of the enzyme in the yeast.

Claim 3 (currently amended): The method of claim 1 [[or claim 2]], wherein the nucleic acid has a sequence as set forth in SEQ ID NO:1 [[or SEQ ID NO:9]], or wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2 [[or SEQ ID NO:10]].

Claim 4 (original): A recombinantly generated phytase made by a method as set forth in claim 1 or claim 2.

Claim 5 (original): A food or feed comprising a phytase made by a method as set forth in claim 1 or claim 2.

Claim 6 (original): The method of claim 3, further comprising isolating the expressed phytase.

Claim 7 (original): The method of claim 3, wherein the nucleic acid is expressed in a cell lysate or equivalent.

Claim 8 (original): The method of claim 3, wherein the nucleic acid is expressed in a cell.

Claim 9 (original): The method of claim 8, wherein the cell is prokaryotic cell or a eukaryotic cell.

Claim 10 (original): The method of claim 8, wherein the cell is a bacterial cell, a yeast cell, a plant cell, an insect cell, a fungal cell or an animal cell.

Claim 11 (original): The method of claim 10, wherein the yeast cell is a *Saccharomyces* sp., a *Schwanniomyces* sp., a *Pichia* sp. yeast cell, a *Hansenula* sp. yeast cell, a *Candida* yeast cell or a *Torulopsis* sp. yeast cell.

Claim 12 (original): The method of claim 11, wherein the yeast cell is a *Saccharomyces cerevisiae*, a *Schizosaccharomyces pombe*, a *Schwanniomyces occidentalis*, a *Pichia pastoris* or a *Hansenula polymorpha*.

Claim 13 (original): The method of claim 10, wherein the bacterial cell is a gram negative bacteria or a gram positive bacteria.

Claim 14 (original): The method of claim 13, wherein the gram negative bacteria is a *Pseudomonas* sp.

Claim 15 (original): The method of claim 13, wherein the gram negative bacteria is a *Escherichia coli* or a *Pseudomonas fluorescens*.

Claim 16 (original): The method of claim 13, wherein the gram positive bacteria is a *Streptomyces* sp., a *Lactobacillus* sp., a *Lactococcus* sp. or a *Bacillus* sp.

Claim 17 (original): The method of claim 16, wherein gram positive bacteria is a *Lactobacillus gasseri*, a *Lactococcus lactis*, a *Lactococcus cremoris* or a *Bacillus subtilis*.

Claim 18 (original): The method of claim 10, wherein the fungal cell is an *Aspergillus* sp.

Claim 19 (original): The method of claim 18, wherein the fungal cell is an *Aspergillus terreus* or an *Aspergillus ficuum*.

Claim 20 (original): The method of claim 1 or claim 2, wherein the nucleic acid comprises a cloning vehicle.

Claim 21 (original): The method of claim 20, wherein the cloning vehicle comprises an expression cassette, a vector, a plasmid, a phage, a phagemid, a cosmid, a fosmid, a bacteriophage or an artificial chromosome.

Claim 22 (original): The method of claim 1 or claim 2, wherein the polypeptide further comprises a signal peptide and the polypeptide is secreted by the cell.

Claim 23 (new): A feed comprising a phytase made by a method comprising the following steps:

- (a) providing a nucleic acid derived from an *E. coli*, wherein the nucleic acid encodes a polypeptide having a phytase activity;
- (b) providing a composition comprising a feed;
- (c) expressing the nucleic acid under conditions which allow expression of the phytase;

(d) mixing the phytase of (c) with the composition of (b), thereby making a feed comprising a phytase.

Claim 24 (new): A feed comprising a phytase made by a method comprising the following steps:

(a) providing a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity;

(b) providing a composition comprising a feed;

(c) expressing the nucleic acid under conditions which allow expression of the phytase;

(d) mixing the phytase of (c) with the composition of (b), thereby making a feed comprising a phytase.

Claim 25 (new): The feed of claim 23 or claim 24, wherein the nucleic acid is expressed *in vitro*.

Claim 26 (new): The feed of claim 24 or claim 24, wherein the nucleic acid is expressed in a cell.

Claim 27 (new): The feed of claim 26, wherein the nucleic acid is expressed in a yeast cell under conditions which allow expression of the enzyme in the yeast cell.

Claim 28 (new): The feed of claim 23, wherein the nucleic acid has a sequence as set forth in SEQ ID NO:1, or wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2.

Claim 29 (new): The method of claim 24, wherein the nucleic acid has a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.

Claim 30 (new): A feed comprising a recombinant phytase, wherein the recombinant phytase is generated by expression of a nucleic acid initially derived from an *E. coli*.

Claim 31 (new): A feed comprising a recombinant phytase, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.

Claim 32 (new): A method for treating a feed comprising a phytate to lower the phytate content in the feed and increasing the amount of inorganic phosphorous in the feed comprising the following steps:

- (a) providing a recombinant phytase encoded by a nucleic acid derived from an *E. coli*;
- (b) providing a composition comprising a phytate-comprising feed;
- (c) contacting the phytase of (a) with the composition of (b) under conditions wherein the phytase catalyzes the hydrolysis of phytate, thereby making a feed lower in phytate content and higher in inorganic phosphorous content.

Claim 33 (new): The method of claim 32, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2.

Claim 34 (new): A method for treating a feed comprising a phytate to lower the phytate content in the feed and increasing the amount of inorganic phosphorous in the feed comprising the following steps:

- (a) providing a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity;
- (b) providing a composition comprising a phytate-comprising feed;

(c) contacting the phytase of (a) with the composition of (b) under conditions wherein the phytase catalyzes the hydrolysis of phytate, thereby making a feed lower in phytate content and higher in inorganic phosphorous content.

Claim 35 (new): The method of claim 34, wherein the nucleic acid has a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.

Claim 36 (new): A method for supplementing the diet of an animal by increasing the amount of inorganic phosphorous in an ingested feed comprising feeding to the animal a composition comprising a recombinant phytase, wherein the recombinant phytase is encoded by a nucleic acid derived from an *E. coli*.

Claim 37 (new): The method of claim 36, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2.

Claim 38 (new): A method for supplementing the diet of an animal by increasing the amount of inorganic phosphorous in an ingested feed comprising feeding to the animal a composition comprising a recombinant phytase, wherein the recombinant phytase is encoded by a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity.

Claim 39 (new): The method of claim 38, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.

Claim 40 (new): A food supplement comprising a composition comprising a recombinant phytase, wherein the recombinant phytase is encoded by a nucleic acid derived from an *E. coli*.

Claim 41 (new): The food supplement of claim 40, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2.

Claim 42 (new): A food supplement comprising a composition comprising a recombinant phytase, wherein the recombinant phytase is encoded by a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity.

Claim 43 (new): The food supplement of claim 42, wherein the phytase is encoded by a nucleic acid having a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the phytase has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.

Claim 44 (new): The food supplement of claim 40 or claim 42, wherein the nucleic acid is expressed in a plant cell and the plant cell is fed to the animal.

Claim 45 (new): The food supplement of claim 44, wherein the plant cell comprises a transgenic plant or plant part.

Claim 46 (new): The food supplement of claim 40 or claim 42, wherein the composition comprises an aqueous liquid formulation.

Claim 47 (new): A drinkable foodstuff comprising a recombinant phytase, wherein the recombinant phytase is encoded by a nucleic acid derived from an *E. coli*.

Claim 48 (new): A drinkable foodstuff comprising a recombinant phytase, wherein the recombinant phytase is encoded by a non-natural or synthetically generated nucleic acid encoding a polypeptide having a phytase activity.

Applicant : Short, et al.  
Serial No. : 10/601,319  
Filed : June 20, 2003  
Page : 9 of 11

Atty's Docket No.: 564462001824

Claim 49 (new): The drinkable foodstuff of claim 47 or claim 48 comprising a liquor, a wine, a mixed alcoholic drink, a wine cooler, an alcoholic coffee, a beer, a near-beer, a juice, an extract, a homogenate or a puree.

Claim 50 (new): The method of claim 2, wherein the nucleic acid has a sequence as set forth in SEQ ID NO:1 or SEQ ID NO:9, or wherein the polypeptide has an amino acid sequence as set forth in SEQ ID NO:2 or SEQ ID NO:10.